Oceanographic data from Frobisher Bay in the Eastern Canadian Arctic for the year 1981

Joseph E. Lovrity

Arctic Biological Station
Department of Fisheries and Oceans
555 St. Pierre Blvd.
Ste. Anne de Bellevue, Que. H9X 3R4

July 1982

Canadian Data Report of Fisheries and Aquatic Sciences No. 343

Canadian Data Report of Fisheries and Aquatic Sciences

These reports provide a medium for filing and archiving data compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of Data Reports reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records. Numbers 26-160 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Data Reports. The current series name was changed with report number 161.

Data Reports are not intended for general distribution and the contents must not be referred to in other publications without prior written clearance from the issuing establishment. The correct citation appears above the abstract of each report.

Rapport statistique canadien des sciences halieutiques et aquatiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

Les Rapports statistiques ne sont pas préparés pour une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au haut du résumé de chaque rapport.

Canadian Data Report of
Fisheries and Aquatic Sciences 343

July 1982

OCEANOGRAPHIC DATA FROM FROBISHER BAY IN THE EASTERN CANADIAN ARCTIC FOR THE YEAR 1981

by

Joseph E. Lovrity

Arctic Biological Station
Department of Fisheries and Oceans
555 St. Pierre Blvd.
Ste. Anne de Bellevue, Quē. H9X 3R4

©Minister of Supply and Services Canada 1982

Cat. No. Fs97-13/0343 ISSN 0706-6465

Correct citation for this publication:

Lovrity, J. E. 1982. Oceanographic data from Frobisher Bay in the Eastern Canadian Arctic for the year 1981. Can. Data Rep. Fish. Aquat. Sci. 343: v + 45 p.

CONTENTS

Abstract/Résumé	iv
Acknowledgements	v
Introduction	1
Methods	2
Map of Station Positions	3
Table 1. Station locations	5
Table 2. Explanation of data headings	7
Table 3. Frobisher Bay ice data	9
Table 4. Frobisher Bay oceanographic data	17

ABSTRACT

Lovrity, J. E. 1982. Oceanographic data from Frobisher Bay in the Eastern Canadian Arctic for the year 1981. Can. Data Rep. Fish. Aquat. Sci. 343: v + 45 p.

Tables of oceanographic data from 24 station occupations in Frobisher Bay include information on temperature, salinity, nitrite, nitrate, phosphate, silicate, ammonia and chlorophyll *a*, *b*, and *c*.

Key words: Arctic waters, Canada coast, sea ice, temperature, salinity, nutrients, chlorophyll.

RESUME

Lovrity, J. E. 1982. Oceanographic data from Frobisher Bay in the Eastern Canadian Arctic for the year 1981. Can. Data Rep. Fish. Aquat. Sci. 343: v + 45 p.

Tables des données physiques et chimique de 24 stations occupées dans la Baie Frobisher en 1981 incluant des renseignements sur les temperature, salinité, nitrites, nitrates, phosphates, silicates, ammoniac, et les chlorophylles *a*, *b*, et *c*.

ACKNOWLEDGEMENTS

Most of the logistical and field operations were led by Douglas Hope who also participated in sample analyses. Collecting in the summer was carried out by G. Atkinson, L. Bertrand, J. Fife, C. Miguez, F. Paton and M. Wyszkowski. Assistance in laboratory analyses was provided by D. Harbour, L. Houle, and A. Mohammed. Partial financial assistance for the ice period of the program was supplied by Esso Resources Canada Limited and Canterra Energy Limited (formerly Aquitaine Company of Canada Limited). A. Thériault and P. Bannon extended their support at the Ikaluit Research Laboratory in Frobisher Bay. I thank Lois McMullon for her help in the preparation of the typescript and the production of the final report.

INTRODUCTION

The collections of data included in this report were made to support ongoing marine research by the Arctic Biological Station. Samplings were carried out in upper Frobisher Bay from February to September, 1981. On the sea ice, snowmobiles were used; otherwise collecting was done with the longliner M.V. Nanook or a 6.7-metre freighter canoe specially equipped for oceanographic work.

The sea ice was sampled from late winter to early summer and the data obtained are placed at the beginning of the data tables. Additionally a single tidal cycle was sampled nine times at Station 81-1 on August 16 and 17.

METHODS

Ice core samples for analyses were collected with a 7.6-cm SIPRE (CRREL) corer. The cores were cut with a teflon coated saw, thawed in stainless steel trays, and subsampled for analytical work. Under-ice water sampling depths were measured from the under-surface of the sea ice. Total Station depths from the surface of the water in the ice hole.

When collecting from boats, standard collecting procedures were followed. Water temperatures were measured using an immersion thermometer in the water bottle immediately after collecting the sample.

Salinity values were determined by using a Bissett Berman Model 6230 laboratory salinometer.

Phosphate-phosphorus, nitrite-nitrogen, nitrate-nitrogen, and silicate-silicon were analysed following Strickland and Parsons (Bull. Fish. Res. Board Can. 167, 2nd ed. 1972). Chlorophyll *a*, *b*, and *c*, were determined following Strickland and Parsons and the values were corrected by using the equations of Jeffrey and Humphrey (Biochem. Physiol. Pflanz. 167, ~~175~~ pp 191-194, 1975). For ammonia-nitrogen the method of G. Dal Pont et al. (Rep. Div. Fish. Oceanogr. CSIRO, Cronulla, 55, 1974) was used.

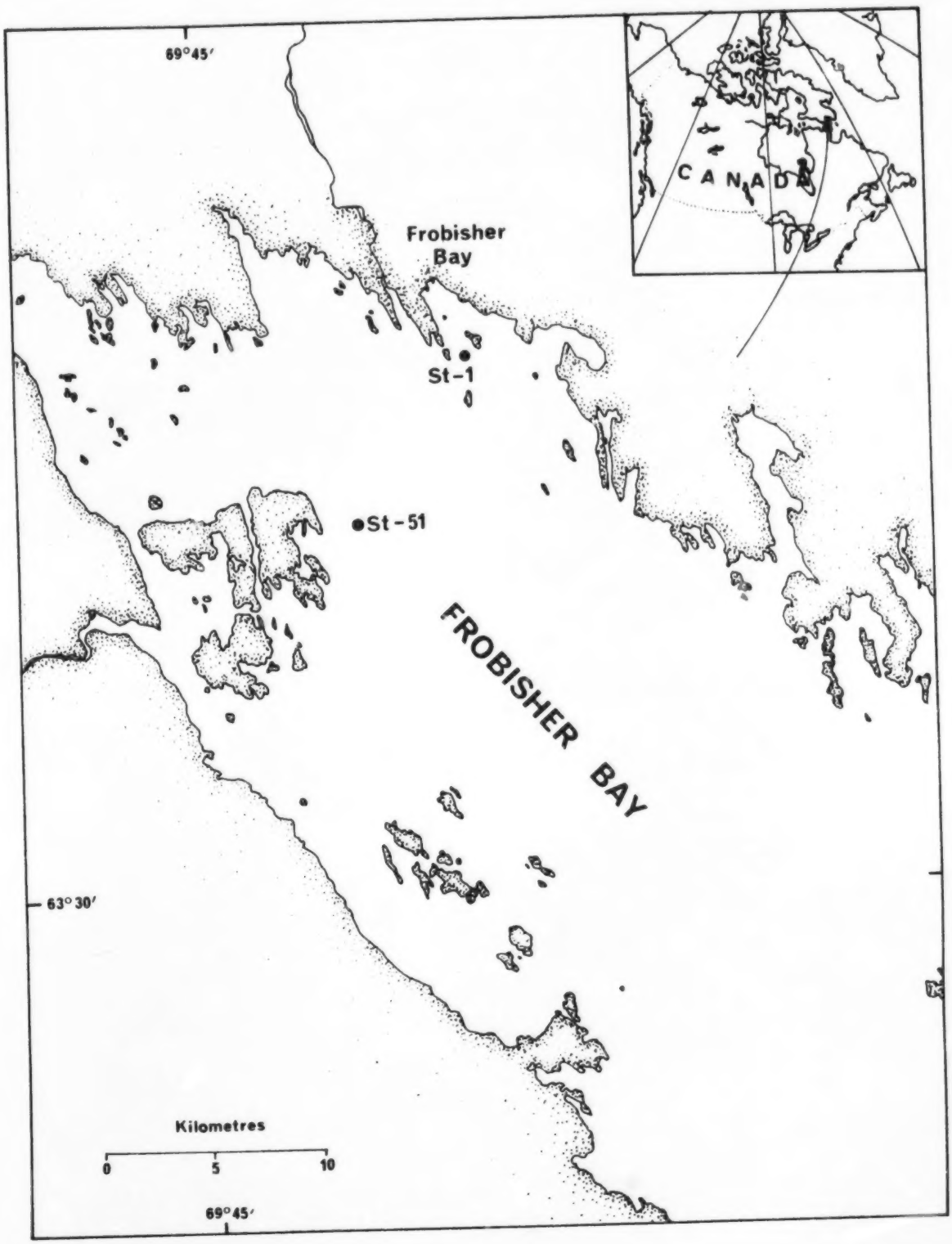
69°45′
Frobisher Bay
St-1
St-51
FROBISHER BAY
63°30′
Kilometres
0
5
10
69°45′
CANADA

Table 1. Station locations.

Station	N. Latitude	W. Longitude
81-1	63°42.8'	68°30.8'
81-51	63°38.8'	68°35.6'

Table 2. Explanations of data headings.

Table headings	
Time:	Local, in hours
Station depth:	Depth to bottom, in metres
Air temp.:	Air temperature, in degrees Celsius
Cloud:	Cover, in eighths
Wind:	Direction, in compass points; speed, in km per hour
Ice cover:	Thickness of sea ice, in centimetres
Snow cover:	Thickness of snow, in centimetres
Secchi:	Secchi disc depth, in metres

Water properties	
Depth (water):	Depth of sample, in metres
Depth (ice):	Thickness and location of sample, in centimetres
Temp.:	Water temperature, in degrees Celsius
Salinity:	As parts per thousand
NO_2-N:	Nitrite, as microgram-atoms per litre
NO_3-N:	Nitrate, as microgram-atoms per litre
PO_4-P:	Phosphate, as microgram-atoms per litre
SiO_3-Si:	Silicate, as microgram-atoms per litre
NH_3-N:	Ammonia, as microgram-atoms per litre
Ch.a:	Chlorophyll a, as milligrams per cubic metre
Ch.b:	Chlorophyll b, as milligrams per cubic metre
Ch.c:	Chlorophyll c, as milligrams per cubic metre

Table 3. Frobisher Bay Ice data.

Station	Date	Time	Sta. depth	Air temp.
81-1	14 Feb 81	1230	43	-27
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
2	20	123	8	4.5

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0- 41	-	7.663	0.15	1.17	0.06
41- 82	-	6.977	0.12	0.49	0.11
82-123	-	7.339	0.10	0.53	0.70

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0- 41	5.08	4.00	0.34	0.34	0.76
41- 82	3.20	4.63	0.23	0.23	0.48
82-123	4.19	4.91	5.53	0.75	3.01

Station	Date	Time	Sta. depth	Air temp.
81-1	24 Mar 81	1500	42.5	-10.5
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
7	0	142	15	7

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0- 47	-	-	0.03	0.40	0.06
47- 94	-	-	0.03	0.10	0.11
94-142	-	-	0.01	0.28	0.15

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0- 47	3.06	3.05	0.48	0.56	2.26
47- 94	3.16	2.93	0.42	0.30	1.76
94-142	0.55	4.12	3.88	0.12	2.98

Station	Date	Time	Sta. depth	Air temp.
81-1	1 May 81	1045	44.5	2
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	WNW 14	142	34	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0- 47	-	-	0.04	0.31	0.41
47- 94	-	5.074	0.06	0.31	0.12
94-142	-	3.965	0.08	0.76	0.19

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0- 47	0.70	2.25	0.51	0.37	0.64
47- 94	0.00	1.27	0.73	0.35	0.69
94-142	0.25	1.95	2.94	0.16	0.88

Station	Date	Time	Sta. depth	Air temp.
81-1	27 May 81	1300	47	-2
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
4	WNW 20	148	39	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0- 49	-	5.906	0.10	0.30	0.08
49- 98	-	4.723	0.09	0.00	0.08
98-148	-	4.536	0.07	0.19	0.11
143-148	-	-	0.07	10.50	2.35

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0- 49	0.57	3.13	1.30	0.40	0.90
49- 98	0.00	2.50	2.09	0.57	2.64
98-148	0.28	2.42	4.80	0.37	1.62
143-148	3.72	3.68	391.79	12.12	114.38

Last values are for bottom 5 cm of ice.

Station	Date	Time	Sta. depth	Air temp.
81-1	19 Jun 81	1630	41	4
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
6	S 10	137	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0- 46	-	<2.8	0.03	0.33	0.15
46- 92	-	<2.8	0.05	0.29	0.07
92-132	-	<2.8	0.05	0.06	0.19
132-137	-	-	0.01	0.15	0.27

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0- 46	1.95	5.12	0.51	0.60	1.19
46- 92	0.00	1.68	1.14	0.28	0.94
92-137	0.00	1.32	1.94	0.61	1.15
132-137	0.00	2.32	21.34	0.50	6.18

Last values are for bottom 5 cm of ice.

Table 4. Frobisher Bay Oceanographic data.

Station	Date	Time	Sta. depth	Air temp.
81-1	14 Feb 81	1315	43	-27
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
2	20	123	8	4.5

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	-1.8	33.548	0.09	4.07	0.77
10	-1.8	32.275	0.11	4.07	0.87
42	-1.8	33.385	0.10	4.15	0.94

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	11.54	2.50	0.19	0.12	0.31
10	13.05	1.94	.17	0.10	0.21
42	16.78	2.26	0.19	0.14	0.19

Station	Date	Time	Sta. depth	Air temp.
81-1	24 Mar 81	1225	42.5	-10.5
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
7	0	142	15	7

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	-1.8	-	0.05	5.24	0.82
1	-1.8	-	0.05	4.90	0.87
3	-1.8	-	0.04	4.05	0.77
5	-1.8	-	0.08	4.92	0.75
7	-1.8	-	0.07	4.74	0.73
10	-1.8	-	0.05	5.06	0.86
20	-1.8	-	0.04	4.39	0.82
30	-1.8	-	0.05	4.79	0.88
40	-1.8	-	0.07	4.65	0.80

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	13.05	1.62	0.13	0.16	0.29
1	11.19	1.43	0.11	0.03	0.28
3	8.51	1.27	0.16	0.11	0.18
5	11.77	1.35	0.10	0.12	0.34
7	10.02	1.27	0.08	0.06	0.02
10	11.77	1.27	0.16	0.03	0.50
20	13.75	1.39	0.16	0.08	0.59
30	10.02	1.39	0.13	0.06	0.37
40	9.21	1.62	0.13	0.06	0.37

Station	Date	Time	Sta. depth	Air temp.
81-1	1 May 81	1550	44.5	-1
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	WNW 14	142	34	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	-1.7	32.884	0.10	7.15	1.03
1	-1.7	-	0.06	5.78	0.91
3	-1.7	33.260	0.07	7.20	1.08
5	-1.7	33.290	0.05	6.80	1.08
7	-1.7	33.336	0.09	7.08	1.06
10	-1.7	33.344	0.07	6.63	1.03
20	-1.7	33.354	0.09	6.72	1.08
30	-1.7	33.352	0.08	7.00	1.01
40	-1.7	33.366	0.09	7.08	1.03

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	14.64	0.26	0.20	0.25	0.37
1	13.79	0.04	0.22	0.36	0.61
3	13.69	0.04	0.00	0.00	0.09
5	13.90	0.08	0.23	0.32	0.57
7	14.53	0.23	0.07	0.18	0.26
10	12.90	0.60	0.28	0.34	0.54
20	13.79	1.05	0.15	0.23	0.39
30	13.79	1.01	0.20	0.29	0.47
40	11.26	0.79	0.12	0.19	0.36

Station	Date	Time	Sta. depth	Air temp.
81-1	27 May 81	1553	47	-2
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
4	WNW 20	148	39	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	-1.7	32.285	0.09	6.90	1.00
1	-1.7	32.677	0.08	6.98	0.78
3	-1.7	32.863	0.08	7.09	1.02
5	-1.7	33.207	0.08	7.09	1.00
7	-1.7	33.264	0.10	7.32	1.05
10	-1.7	33.287	0.09	7.42	1.00
20	-1.7	33.229	0.09	7.42	1.02
30	-1.7	33.315	0.09	7.42	1.05
40	-1.7	33.341	0.10	7.48	1.05

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	13.77	0.32	0.48	0.29	0.56
1	14.07	0.20	0.33	0.40	0.68
3	14.87	0.28	0.33	0.40	0.68
5	13.07	0.51	0.23	0.24	0.36
7	14.98	0.20	0.28	0.35	0.48
10	11.66	0.55	0.24	0.93	0.27
20	12.97	0.32	0.30	0.41	0.68
30	11.96	0.20	0.28	0.34	0.54
40	11.96	0.28	0.50	0.76	1.13

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Jun 81	2315	47	3
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	E 13	137	7	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	-0.1	7.521	0.03	1.53	0.31
1	-0.5	28.843	0.10	6.33	0.90
3	-0.1	30.243	0.11	6.70	0.94
5	-0.5	31.429	0.10	7.14	0.99
7	-0.5	32.741	0.11	7.44	1.04
10	-0.5	33.152	0.10	7.60	1.04
20	-0.6	33.261	0.10	7.63	1.09
30	-0.6	33.226	0.12	7.70	0.97
40	-0.4	33.291	0.11	7.69	1.11

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	3.87	1.10	5.43	0.83	0.64
1	11.03	0.14	0.91	0.40	0.44
3	10.97	0.10	0.77	0.36	0.50
5	12.26	0.00	0.77	0.38	0.38
7	12.36	0.00	0.40	0.30	0.47
10	13.66	0.14	0.09	0.01	0.03
20	12.86	0.17	0.34	0.33	0.41
30	9.97	0.61	0.44	0.54	0.77
40	12.56	2.38	0.29	0.21	0.42

Station	Date	Time	Sta. depth	Air temp.
81-1	27 Jul 81	1610	44	11
Cloud	Wind	Ice cover	Snow cover	Secchi
8	S 3	--	--	9

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	7.5	24.694	0.01	0.18	0.22
1	3.3	26.770	0.00	0.08	0.24
3	2.1	30.433	0.00	0.00	0.34
5	0.8	31.604	0.00	0.06	0.39
7	-0.1	32.099	0.00	0.10	0.36
10	-0.7	32.343	0.00	0.42	0.51
20	-0.9	32.433	0.02	2.80	0.51
30	-0.9	32.465	0.04	3.95	0.73
40	-1.0	32.517	0.03	4.69	0.65

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	8.55	0.00	1.79	0.90	1.78
1	4.69	0.12	1.58	0.73	1.56
3	1.93	0.00	2.70	0.91	2.20
5	0.83	0.00	4.35	0.89	2.39
7	2.02	0.16	5.97	0.64	2.08
10	2.11	0.00	7.56	0.65	3.10
20	9.83	0.00	6.24	0.83	2.75
30	9.56	0.62	5.23	0.68	2.31
40	18.20	2.69	3.50	0.94	2.05

Station	Date	Time	Sta. depth	Air temp.
81-1	3 Aug 81	0932	46	7.5
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	NW 10	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.2	31.667	0.00	0.13	0.36
1	1.4	31.633	0.00	0.10	0.26
3	1.0	31.765	0.00	0.10	0.26
5	0.3	32.090	0.00	0.81	0.41
7	0.0	32.192	0.00	0.90	0.36
10	-0.1	32.230	0.00	1.31	0.46
20	-0.6	32.396	0.02	3.05	0.56
30	-0.7	32.412	0.02	3.40	0.43
40	-0.8	32.452	0.03	4.03	0.63

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	1.96	0.00	4.40	0.95	2.46
1	1.37	0.00	4.12	0.90	2.33
3	1.56	0.00	4.48	0.75	2.16
5	1.86	0.00	5.63	0.56	2.46
7	1.27	0.00	6.36	0.68	2.65
10	2.64	0.00	5.68	0.75	2.37
20	2.44	0.09	4.76	0.80	2.29
30	2.93	0.12	4.49	0.68	1.95
40	5.28	0.45	3.79	0.82	1.84

Station	Date	Time	Sta. depth	Air temp.
81-1	4 Aug 81	1010	47	10
Cloud	Wind	Ice cover	Snow cover	Secchi
1	N 4	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	2.9	-	-	-	-
1	0.6	-	-	-	-
3	0.4	-	-	-	-
5	0.0	-	-	-	-
7	-0.2	-	-	-	-
10	-0.5	-	-	-	-
20	-0.6	-	-	-	-
30	-0.7	-	-	-	-
40	-0.8				

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	-	-	-	-	-
1	-	-	-	-	-
3	-	-	-	-	-
5	-	-	-	-	-
7	-	-	-	-	-
10	-	-	-	-	-
20	-	-	-	-	-
30	-	-	-	-	-
40	-				

Station	Date	Time	Sta. depth	Air temp.
81-1	8 Aug 81	1115	44	7
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	NW 5	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.5	-	-	-	-
5	0.4	-	-	-	-
10	-0.6	-	-	-	-
15	-0.8	-	-	-	-
20	-0.8	-	-	-	-
25	-0.9	-	-	-	-
30	-0.9	-	-	-	-
35	-1.0	-	-	-	-
40	-1.0	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	-	-	-	-	-
5	-	-	-	-	-
10	-	-	-	-	-
15	-	-	-	-	-
20	-	-	-	-	-
25	-	-	-	-	-
30	-	-	-	-	-
35	-	-	-	-	-
40	-	-	-	-	-

Station	Date	Time	Sta. depth	Air temp.
81-1	10 Aug 81	1055	42	12
Cloud	Wind	Ice cover	Snow cover	Secchi
8	0	--	--	7.5

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	5.4	30.597	0.00	0.00	0.22
1	2.4	31.681	0.00	0.00	0.36
3	2.2	31.575	0.00	0.00	0.34
5	1.3	32.156	0.00	0.00	0.31
7	0.5	32.384	0.01	0.18	0.38
10	-0.2	32.458	0.00	1.02	0.48
20	-0.7	32.530	0.01	4.02	0.53
30	-0.8	32.586	0.03	4.85	0.74
40	-0.8	32.604	0.00	5.24	0.79

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	13.80	1.67	3.49	0.44	1.31
1	12.75	2.45	4.41	0.91	1.89
3	1.66	0.00	3.88	0.54	1.38
5	0.70	0.00	4.96	0.50	1.52
7	1.92	0.00	5.36	0.47	1.88
10	3.23	0.00	5.30	0.51	1.76
20	14.23	0.35	3.07	0.65	1.24
30	15.37	0.93	1.83	0.60	0.83
40	7.95	0.74	1.89	0.48	0.74

Station	Date	Time	Sta. depth	Air temp.
81-1	16 Aug 81	1526	47	10
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
1	SE 9	--	--	9

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	3.5	18.283	0.00	2.80	0.34
1	0.8	31.532	0.03	2.47	0.58
3	0.3	32.504	0.06	1.44	0.46
5	0.2	32.580	0.05	3.57	0.74
7	0.0	32.615	0.01	3.53	0.74
10	0.0	32.608	0.00	2.55	0.58
20	-0.2	32.613	0.01	3.70	0.67
27*	-0.2	32.613	0.00	3.78	0.70
30	-0.3	32.618	0.01	3.89	0.70
40	-	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	15.20	9.78	0.95	0.77	1.28
1	9.43	0.65	1.38	0.42	0.81
3	13.62	0.38	1.59	0.52	1.64
5	5.68	0.52	1.60	0.58	1.15
7	5.94	0.35	1.70	0.71	1.30
10	15.11	0.35	1.81	0.73	1.49
20	16.68	0.61	1.66	0.55	1.14
27*	5.68	0.65	2.01	1.08	1.88
30	5.94	0.78	1.88	0.55	1.07
40	-	-	-	-	-

*Three times secchi disc reading

Station	Date	Time	Sta. depth	Air temp.
81-1	16 Aug 81	1728	39	4.5
Cloud	Wind	Ice cover	Snow cover	Secchi
2	SE 8	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	0.2	32.259	0.09	3.45	0.60
1	0.2	32.281	0.00	3.64	0.70
3	0.0	32.519	0.01	3.94	0.53
5	0.2	32.169	0.09	3.34	0.51
7	-0.3	32.584	0.06	3.37	0.65
10	-0.3	32.590	0.07	3.38	0.58
20	-0.5	32.590	0.10	3.42	0.48
27*	-0.6	32.596	0.00	3.64	0.88
30	-0.6	32.592	0.02	2.73	0.90
38	-0.6	32.599	0.00	4.44	0.88

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	9.10	0.49	2.00	0.49	1.05
1	2.73	0.91	1.77	0.51	1.00
3	9.28	0.78	1.77	0.61	0.96
5	15.72	0.88	1.56	0.34	0.78
7	7.35	1.01	1.80	0.84	1.45
10	9.93	1.04	1.49	0.47	0.75
20	20.75	0.95	1.55	0.43	0.87
27*	2.16	1.47	1.67	0.37	0.97
30	2.92	0.78	1.66	0.56	1.02
38	2.06	0.95	1.75	0.75	1.50

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	16 Aug 81	2043	42	--
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
7	SE 8	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	0.7	32.086	0.05	2.24	0.75
1	0.5	32.149	0.05	2.40	0.70
3	0.2	32.266	0.03	2.81	0.75
5	0.0	32.366	0.04	2.98	0.75
7	-0.2	32.556	0.05	2.70	0.73
10	-0.2	32.595	0.04	3.11	0.80
20	-0.6	32.590	0.03	3.21	0.78
27*	-0.6	32.614	0.04	3.65	0.85
30	-0.6	32.598	0.05	3.49	0.83
40	-0.6	32.623	0.05	3.71	0.83

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	10.56	0.12	2.59	0.93	1.64
1	12.41	0.65	1.88	0.64	1.15
3	9.07	0.65	2.28	0.63	1.27
5	8.33	0.58	1.73	0.35	0.84
7	7.47	0.38	2.31	0.87	1.63
10	9.44	0.58	1.97	0.85	1.51
20	10.19	0.45	2.17	1.18	2.03
27*	8.83	0.58	1.80	0.82	1.58
30	10.43	0.55	1.45	0.30	0.71
40	11.30	0.81	1.58	0.77	1.20

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Aug 81	0018	35	4
Cloud	Wind	Ice cover	Snow cover	Secchi
3	SE 15	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.0	30.395	0.06	3.40	0.63
1	0.5	31.878	0.02	2.50	0.80
3	0.2	32.466	0.05	1.99	0.83
5	-0.2	32.580	0.03	3.33	0.65
7	-0.2	32.560	0.03	3.22	0.75
10	-0.2	32.580	0.03	3.56	0.83
20	-0.3	32.614	0.02	3.18	0.73
27*	-0.3	32.621	0.00	3.19	0.85
30	-0.5	32.622	0.02	2.62	0.85
40	-	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	9.01	1.27	1.49	0.46	0.87
1	7.17	1.21	1.66	0.55	1.14
3	5.22	0.81	1.94	0.60	1.27
5	9.28	1.11	1.73	0.34	0.96
7	6.07	1.47	1.86	0.82	1.32
10	2.44	0.91	2.10	0.71	1.29
20	10.85	1.37	2.28	0.76	-
27*	5.97	1.11	2.31	0.85	1.76
30	6.43	1.37	2.27	0.71	1.47
40	-	-	-	-	-

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Aug 81	0308	32	4
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
2	E 15	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.8	28.650	0.07	2.85	0.53
1	1.8	29.209	0.00	1.59	0.73
3	0.8	31.949	0.07	1.52	0.53
5	0.5	32.281	0.00	1.44	0.75
7	0.3	32.427	0.00	2.06	0.88
10	0.3	32.420	0.01	3.46	1.08
20	-0.2	32.618	0.01	2.18	0.88
27*	-0.2	32.621	0.00	2.54	0.65
30	-0.3	32.615	0.00	2.79	0.78
40	-	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	12.13	2.16	1.19	0.69	1.00
1	2.35	4.99	1.26	0.57	0.91
3	5.79	7.82	1.70	0.72	1.18
5	2.64	4.30	1.51	0.28	0.71
7	1.87	3.25	1.72	0.55	0.89
10	2.64	2.79	1.83	0.59	0.96
20	1.77	0.65	2.05	0.66	1.09
27*	4.23	0.62	1.78	0.40	1.04
30	1.29	0.95	1.83	0.57	1.08
40	-	-	-	-	-

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Aug 81	0600	38	4
Cloud	Wind	Ice cover	Snow cover	Secchi
3	SE 17	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.0	30.741	0.07	2.43	0.63
1	1.0	31.578	0.11	2.73	0.63
3	1.0	32.107	0.06	2.35	0.51
5	0.5	32.315	0.06	2.33	0.60
7	0.5	32.074	0.04	2.83	0.38
10	0.4	32.385	0.09	2.98	0.65
20	-0.2	32.584	0.08	3.46	0.70
27*	-0.3	32.575	0.05	3.25	0.73
30	-0.3	32.597	0.08	3.39	0.63
40	-	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	22.78	1.77	1.66	0.55	1.14
1	16.72	0.49	1.87	0.69	1.61
3	9.97	0.58	2.05	0.62	1.46
5	6.16	0.95	2.07	0.37	0.96
7	9.48	1.41	1.98	0.73	1.67
10	9.09	1.37	2.05	0.54	1.25
20	8.70	0.98	2.23	0.45	1.35
27*	12.51	1.41	2.10	0.69	1.54
30	8.60	1.08	2.17	0.48	1.36
40	-	-	-	-	-

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Aug 81	0833	--	--
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
6	NW 17	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	0.1	32.319	0.01	2.40	0.38
1	0.2	32.323	0.01	2.24	0.51
3	0.1	32.331	0.00	2.16	0.46
5	0.0	32.352	0.00	2.25	0.41
7	0.0	32.376	0.00	2.50	0.41
10	0.0	32.458	0.00	2.57	0.46
20	-0.3	32.588	0.01	3.45	0.46
27*	-0.4	32.596	0.00	3.60	0.51
30	-0.4	32.602	0.00	3.26	0.46
40	-0.5	32.631	0.01	3.82	0.60

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	2.54	0.06	2.84	0.71	1.64
1	3.91	0.45	2.73	0.59	1.49
3	2.74	0.19	2.72	0.65	1.82
5	2.74	0.58	2.80	0.47	1.40
7	2.44	1.37	2.72	0.76	1.78
10	3.71	0.78	2.44	0.62	1.57
20	3.71	0.75	2.20	0.83	1.57
27*	3.23	1.34	2.24	0.38	1.02
30	2.44	1.11	2.11	0.52	1.24
40	5.87	1.18	2.12	1.03	1.87

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Aug 81	1200	25	--
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	NW 18	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.4	31.306	0.11	2.92	0.56
1	0.9	31.917	0.08	2.55	0.53
3	0.7	31.998	0.10	2.70	0.53
5	0.3	32.142	0.06	2.44	0.65
7	0.3	32.261	0.08	2.61	0.65
10	0.2	32.461	0.06	3.17	0.53
20	-0.1	32.541	0.06	3.16	0.53
27*	-	-	-	-	-
30	-	-	-	-	-
40	-	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	7.43	0.45	1.91	0.86	1.64
1	9.19	0.98	1.79	0.33	0.83
3	9.87	0.52	2.22	0.65	1.40
5	8.02	0.49	2.48	0.89	1.57
7	10.65	0.75	2.76	0.93	1.82
10	8.11	0.52	2.39	0.67	1.33
20	6.94	1.31	2.47	0.97	1.78
27*	-	-	-	-	-
30	-	-	-	-	-
40	-	-	-	-	-

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	17 Aug 81	1435	38	5
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	S 3	--	--	--

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	2.0	30.974	0.00	2.71	0.31
1	1.7	31.380	0.04	2.69	0.53
3	0.9	32.008	0.04	2.76	0.36
5	0.9	32.129	0.04	2.74	0.43
7	0.9	32.124	0.04	2.37	0.48
10	0.2	32.369	0.01	2.67	0.43
20	0.1	32.493	0.02	3.14	0.53
27*	-0.1	32.590	0.03	3.59	0.48
30	-0.2	32.601	0.03	3.66	0.63
40	-	-	-	-	-

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	3.03	0.06	1.90	1.08	1.45
1	5.46	0.06	1.77	0.61	0.96
3	2.35	0.12	2.26	0.83	1.31
5	2.93	0.19	2.22	0.58	1.07
7	2.93	0.25	2.35	1.05	1.55
10	3.42	0.22	3.00	0.84	1.54
20	3.13	0.72	2.38	0.77	1.29
27*	3.52	0.49	2.28	0.55	1.06
30	3.13	0.45	2.11	0.54	1.00
40	-	-	-	-	-

*Three times secchi disc reading, 1526 hrs, 16 Aug. 1981.

Station	Date	Time	Sta. depth	Air temp.
81-1	22 Aug 81	1040	46	8
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
0	S 5	--	--	10.5

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.0	-	-	-	-
5	0.0	-	-	-	-
10	0.0	-	-	-	-
15	-0.1	-	-	-	-
20	-0.2	-	-	-	-
25	-0.2	-	-	-	-
30	-0.2	-	-	-	-
35	-0.2	-	-	-	-
40	-0.2	-			

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	-	-	-	-	-
5	-	-	-	-	-
10	-	-	-	-	-
15	-	-	-	-	-
20	-	-	-	-	-
25	-	-	-	-	-
30	-	-	-	-	-
35	-	-	-	-	-
40	-	-			

Station	Date	Time	Sta. depth	Air temp.
81-1	24 Aug 81	1055	44	5.5
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
6	S 5	--	--	9.5

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.1	31.070	0.01	1.83	0.33
1	0.2	32.461	0.03	1.79	0.38
3	0.2	32.444	0.02	1.87	0.41
5	0.1	32.564	0.05	2.43	0.31
7	0.1	32.574	0.01	2.15	0.43
10	0.0	32.622	0.04	2.53	0.58
20	-0.2	32.670	0.02	3.03	0.60
30	-0.2	32.677	0.02	3.19	0.63
40	-0.2	32.712	0.02	3.44	0.70

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	2.44	0.06	2.58	0.40	1.14
1	2.44	0.00	3.27	0.37	1.17
3	1.47	0.00	3.27	0.37	1.17
5	2.25	0.02	2.52	0.43	1.15
7	3.03	0.00	3.15	0.42	1.19
10	3.03	0.51	2.58	0.42	1.02
20	-	0.54	1.73	0.35	0.84
30	3.42	0.61	1.51	0.28	0.71
40	4.30	0.74	1.16	0.45	0.63

Station	Date	Time	Sta. depth	Air temp.
81-1	31 Aug 81	0805	47	1.5
Cloud	Wind	Ice cover	Snow cover	Secchi
8	E 5	--	--	10.5

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	0.2	32.148	0.03	2.18	0.63
1	0.2	32.197	0.03	2.18	0.58
3	0.1	32.436	0.01	2.35	0.51
5	0.0	32.573	0.01	2.81	0.51
7	0.0	32.626	0.00	2.62	0.51
10	0.0	32.655	0.02	2.78	0.43
20	0.0	32.698	0.01	3.02	0.65
30	0.0	32.703	0.01	3.25	0.75
40	-0.1	32.721	0.02	3.24	0.70

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	7.04	0.13	1.98	0.13	0.79
1	3.91	0.12	2.20	0.21	0.98
3	5.18	0.15	2.19	0.32	0.94
5	4.79	0.37	2.07	0.39	0.84
7	3.32	0.34	1.96	0.35	0.77
10	4.59	0.31	1.90	0.36	0.90
20	4.89	0.41	1.56	0.34	0.78
30	8.21	0.73	1.52	0.16	0.87
40	7.62	0.79	1.39	0.33	0.72

Ice beginning to form near shore.

Station	Date	Time	Sta. depth	Air temp.
81-1	7 Sep 81	0913	42.5	4
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
8	SW 3	1	--	8

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.1	30.358	0.05	1.30	0.58
1	1.0	31.708	0.03	1.32	0.53
3	0.9	31.690	0.03	1.32	0.43
5	0.8	32.167	0.03	1.30	0.38
7	0.7	32.392	0.03	1.43	0.33
10	0.5	32.605	0.04	1.55	0.48
20	0.3	32.724	0.04	2.39	0.53
30	0.2	32.738	0.05	2.55	0.63
40	-0.2	32.763	0.04	3.09	0.73

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	7.23	3.16	1.53	0.11	0.41
1	7.82	1.43	-	-	-
3	4.50	1.53	2.49	0.09	0.82
5	2.15	0.68	-	-	-
7	1.96	1.92	-	-	-
10	3.13	1.66	2.49	0.08	0.94
20	3.62	2.02	2.05	0.76	0.23
30	9.48	2.44	1.63	0.24	0.57
40	5.96	0.98	1.34	0.28	0.52

Thin ice cover on station.

Table 4 (continued). Frobisher Bay Oceanographic data

Station	Date	Time	Sta. depth	Air temp.
81-51	26 Aug 81	1210	225	7
Cloud	**Wind**	**Ice cover**	**Snow cover**	**Secchi**
4	--	--	--	9

Depth	Temp.	Salinity	NO_2-N	NO_3-N	PO_4-P
0	1.7	32.542	0.00	0.51	0.44
9	0.7	32.562	0.00	0.47	0.39
18	0.0	32.605	0.01	2.54	0.41
22.5	-0.1	32.611	0.02	2.67	0.41
27	-0.1	32.610	0.01	2.77	0.63
36	-0.2	32.618	0.01	2.88	0.77
45	-0.3	32.653	0.01	3.31	0.70
54	-0.3	32.662	0.03	3.39	0.63
72	-0.2	32.716	0.03	3.32	0.58
90	-0.2	32.743	0.03	3.27	0.73

Depth	SiO_3-Si	NH_3-N	Ch.a	Ch.b	Ch.c
0	2.76	0.00	3.60	0.48	1.37
9	7.63	0.00	4.68	0.42	1.64
18	4.32	0.44	1.84	0.39	0.91
22.5	7.08	0.47	2.45	0.56	1.12
27	6.43	0.47	1.88	0.65	1.03
36	5.06	0.69	1.40	0.24	0.64
45	8.09	0.66	1.10	0.38	0.68
54	4.14	0.89	0.93	0.37	0.62
72	6.62	0.92	1.04	0.40	0.69
90	7.08	0.89	0.87	0.48	0.71

Collection depths are multiples of secchi disc readings.